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DEPARTMENT OF COMMERCE - BUREAU OF MINES

SURVEY OF GRAVITIES OF DOMESTIC CRUDES



BY

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By G.R. Hopkins and A.B. Coons

The average gravity of the total crude petroleum produced in the United States during the year 1927 was 32.2° A. P. I., or 0.864 in terms of specific gravity. A similar study, made by the U. S. Geological Survey in 1921, gave the average gravity at that time as 32.0°.

To one who is accustomed to thinking of crude petroleum in terms of Oklahoma-Kansas and North Texas crudes it may be surprising that the average gravity for the entire country is no higher than 32.2°. The chief reason for this apparent discrepancy lies mainly in California production, which in 1927 amounted to over 25 per cent of the total, but which had an average gravity of only 24.1°. A factor of less importance was Arkansas, which, though on the decline as a producing State, exerted a material effect by reason of its average gravity of 21.6°, the lowest for any State. In view of the heavy production of light crude in the Seminole area of Oklahoma during 1927, it would appear that the average gravity should have shown more than a 0.2 per cent gain over 1921. That this did not occur was due to the fact that in the interim between 1921 and 1927 important heavy oil discoveries were made, notably the Smackover field of Arkansas.

The highest average gravity for any State was 48.5°, credited to New Mexico. That State can also boast the highest-gravity crude yet produced in quantity, that is, the crude from the Rattlesnake field in San Juan County. This crude has been assigned a gravity of 65° A.P.I., but has actually been tested as high as 75° A.P.I., corrected for temperature.² Inasmuch as the gravity of the average motor fuel is about 60°, it is not hard to realize the difficulty experienced in handling such a "wild" crude.² Other States with high average gravities are Michigan, 44.0°; New York, 43.5°; West Virginia, 43.3°; and Pennsylvania, 42.0°. However, the combined output of these States was not large and had little effect on the average gravity for the country. The lowest gravity crude reported was that produced at Casmalia, Santa Barbara County, Calif. This crude has a gravity of 6.8° A. P. I., or 1.023 specific gravity, which indicates that it is heavier than water. Other low-gravity crudes are produced at Kern River, Calif., 14.1°, and Irma, Ark., 14.4°. The State of Texas, with the largest number of fields, had a varied assortment of gravities, with a range from below 20° to above 40°. The average for the State was 32.4°, or practically the same as the national average.

1 The Bureau of Mines will welcome reprinting of this article, but requests that the following footnote acknowledgment be used: "Printed by permission of the Director, U. S. Bureau of Mines. (Not subject to copyright.)"

2 Nowels, K. B., Development and relation of oil accumulation to structure in the Shiprock district of the Navajo Indian Reservation, New Mexico: Bull. of A. A. P. G., vol. 13, No. 2, Feb., 1929, p. 127.

Little need be said regarding the production and price data given herewith since these have already been discussed at great length. These figures were drawn from a number of sources, such as Government reports, and trade journals and associations, and in some respects are more complete than as published in the annual Mineral Resources chapters of this Bureau.

The data relative to the per cent of gasoline and sulphur and to the general types of crudes were obtained from the various publications of this bureau relating to the analyses of crude oils, principally from Bureau of Mines Bulletin 291, "Tabulated Analyses of Representative Crude Petroleum of the United States." This bureau has analyzed samples from practically all the producing fields in the United States, but in this publication the only data used were those pertaining to crudes of the same, or nearly the same, gravity as the estimated average.

Gasoline percentage recoveries for 78 samples are given herewith. These were obtained by laboratory methods as a part of the preparation of the reports above referred to on the analyses of crude oils. Although results obtained in the laboratory rarely correspond with those of actual practice, the gasoline-yield figures given herewith should serve as a good indication of the gasoline recovery to be expected from skimming. The production of the fields represented by the 78 samples was the equivalent of 29.4 per cent of the total production in 1927. If the gravity of each of these crudes is weighted on the basis of their production in 1927, the average gravity for all the samples works out to be 30.40. If the per cent of gasoline in each sample is weighted in the same manner, the average gasoline content works out as 23.4 per cent. Since the average weighted gravity of the 78 samples is not far from the average for the entire country, it is probable that this computed figure of 23.4 per cent for gasoline content is close to the actual gasoline yield obtained in skimming operations. As a matter of fact the yield of gasoline (natural gasoline deducted) by straight-run methods in 1927 was 24 per cent of the total crude run.

In general, the higher the gravity the higher the gasoline yield. However no definite rule can be laid down as to the increment to be expected in gasoline percentage recovery for each degree rise in gravity. This is because of differences in chemical composition which, in addition to affecting gasoline recovery by means of its relation to gravity, also exerts an effect which is distinct from gravity. For example, a crude of 30° may contain a higher percentage of gasoline than one of 35°. Another, and perhaps a better way of estimating the probable increase in gasoline recovery for a 1° rise in gravity would be through a study of the differential for each degree gravity posted by the major crude buyers over a long period of time. The gravity basis as now used by the crude buyers in most fields is an attempt to make allowance for the higher gasoline content of high-gravity crudes, and over a period of time the price differential for each degree of gravity would be a rough measure of the increased percentage of gasoline that might be expected.

The rapid increase in production of the West Texas fields has focused attention on the sulphur content of crudes as an item of great importance, because most West Texas crudes are relatively high in sulphur compounds, making them difficult to refine and very corrosive to equipment. The 78 samples of crude selected for this study had a weighted average sulphur content of 1.16 per cent as compared with a weighted average of 1.90 per cent for West Texas. The highest per cent of sulphur for any of the samples was 4.13, reported for the Cat Canyon field of Santa Barbara County, Calif.; the lowest was 0.08 per cent, for Greybull field of Big Horn County, Wyo. Most of the Mid-Continent crudes are low in sulphur, the average being in the neighborhood of 0.25 per cent.

On the basis of composition or "base" there are three common types of crude, namely, paraffin-base crudes, asphalt or naphthene base crudes, and crudes of a mixed or intermediate base.

In general, paraffin-base crudes represent those which, on being chilled slowly, deposit a waxy material or "paraffin." Crudes of this type supply the major portion of the paraffin wax of commerce. Paraffin-base crudes are produced mainly in the Appalachian district, though crudes from other districts, for example, crudes from the Panhandle of Texas, are also classed as paraffin-base oils. Asphaltic base oils are those which contain little or no recoverable paraffin but usually contain asphaltic materials. Since they do not always contain asphalt the term "naphthene" is perhaps a better term for this class of oils. Asphaltic or naphthene base oils are produced mainly in California and in coastal Texas and Louisiana. Mixed or intermediate base crudes are those which can not be assigned to either of the above classes. A large portion of the crude produced in the Central States and the Mid-Continent district are of mixed or intermediate base.

A classification of crudes into these three grades, weighted as to production, provides a rough measure of the potential amounts of wax and asphalts which could be extracted if the demand warranted.

Summary by States

State	Average gravity		Production (thou- sands of barrels)		Average value per barrel for year.	
	Degrees A. P. I.	Specific gravity	1926	1927	1926	1927
Arkansas	21.6	0.924	58,332	40,005	\$1.11	\$1.06
California	24.1	.909	224,673	231,196	1.54	1.13
Colorado	37.2	.839	2,768	2,831	1.84	1.20
Illinois	33.0	.860	7,760	6,994	2.22	1.67
Indiana	33.4	.858	808	852	2.19	1.63
Kansas	36.5	.843	41,498	41,069	2.26	1.42
Kentucky	35.8	.846	6,274	6,719	2.43	1.67
Louisiana	29.9	.877	23,201	22,818	1.65	1.30
Michigan	44.0	.806	94	439	2.69	1.90
Montana	34.8	.851	7,727	5,058	1.32	1.40
New York	43.5	.809	1,956	2,242	3.65	2.90
New Mexico	48.5	.786	1,666	1,226	1.96	1.37
Ohio	40.2	.824	7,272	7,593	2.64	1.97
Oklahoma	38.2	.934	179,195	277,775	2.31	1.43
Pennsylvania	42.0	.816	8,961	9,526	3.56	3.06
Tennessee	41.0	.820	43	60	2.33	1.50
Texas	32.4	.863	166,916	217,389	1.85	1.14
West Virginia	43.3	.810	5,946	6,023	3.46	2.89
Wyoming	35.8	.846	25,776	21,307	1.98	1.40
United States ..	32.2	.864	770,874	901,129	1.88	1.30

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline sulphur	Per cent sulphur	Type (base) of crude
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
ARKANSAS:									
Columbia:									
Stephens	29.0	0.882	607	499	\$1.65	\$1.04	\$0.89	--	--
Lafayette:									
Bradley	26.4	.896	52	44	1/1.54	1/1.20	--	--	--
Nevada:									
Irma	14.4	.970	763	774	1/ .94	1/1.23	--	2.70	M
Onachita and Union:									
Snackover - Light	25.9	.899	5,035	3,445	1.40	1.25	.90	2.00	M
do Heavy	19.8	.935	47,027	31,756	1.10	1.00	.75	2.40	A
Union:									
El Dorado	34.4	.853	2,722	2,473	2.10	1.24	1.22	.83	M
Lisbon	34.0	.855	2,125	1,054	2.10	1.24	1.22	--	--
State	21.6	.924	58,732	40,005	1/1.11	1/1.06	--	--	--

1/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline	Per cent sulphur	Type (base) of crude
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
CALIFORNIA:									
Fresno:									
Coalinga	19.4	0.938	7,340	17,204	\$0.75	\$0.75	0.0	1.07	A
Kern:									
Elk Hills	22.5	.919	12,142	9,978	1.00	.81	.81		
Kern River	14.1	.972	4,227	5,849	.75	.75	.75		
Lost Hills-									
Belridge	25.5	.901	1,678	1,503	1.33	.87	.87		
McKittrick	14.3	.967	2,007	1,872	.75	.75	.75		
Midway-Sunset	19.0	.940	34,070	31,939	.75	.75	.75		
Mount Poso	15.5	.963	52	42	--	--	--		
Round Mountain	18.2	.945	--	13	--	--	--		
Wheeler Ridge	25.3	.902	374	375	.97	.81	.81		
Los Angeles:									
Beverly Hills	18.5	.943	146	138	.98	.35	.85		
Dominguez	31.0	.871	7,839	5,924	1.76	1.03	1.03	2.60	A
Inglewood	18.4	.944	17,644	12,920	.98	.85	.85		
Long Beach	25.8	.900	37,580	34,336	1.40	.90	.90		
Los Angeles	15.5	.963	150	150	--	--	--		
Montebello	23.0	.916	6,600	5,499	.97	.85	.85	.75	A
Newhall	22.0	.922	70	68	.75	.81	.81		
Rosecrans	37.8	.836	6,068	3,502	2.24	1.21	1.21	.53	M
Salt Lake	14.8	.967	353	335	.85	.85	.85		
Santa Fe Springs	33.2	.859	17,728	15,223	1.84	.99	.99	2.73	A
Torrance	20.7	.930	10,293	8,365	1.10	.85	.85	.44	M
Whittier	19.1	.940	760	664	.87	.85	.85		
Orange:									
Coyote Hills	25.0	.904	6,026	5,197	1.30	.90	.90		
Fullerton	22.4	.919	7,062	7,068	1.22	.87	.87		
Huntington Beach	25.6	.901	19,249	26,364	1.40	.90	.90		
Newport Beach	12.3	.984	33	23	--	--	--	1.99	
Richfield	22.3	.920	5,623	7,943	1.22	.87	.87	1.09	M
Seal Beach	24.2	.909	537	16,501	1.34	.89	.89	1.27	M

State County Field	Average gravity Degrees Specific A.P.I.	Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline	Per cent sulphur	Type (base) of crude
		1926	1927	1926	1927			
CALIFORNIA (Cont'd.):								
San Luis Obispo:								
Arroyo Grande	14.8	28	17	\$0.85	\$0.85	5.3	1.30	A
San Mateo:								
Half Moon Bay	14.3	1	1	--	--	60.4	.19	M
Santa Barbara:								
Casmalia	6.8	53	30	--	--	.0	2.84	M
Cat Canyon	15.9	769	947	.85	.85	9.8	4.13	M
Goleta	42.0	--	94	--	--	--	--	--
Lompoc	20.0	16	--	.90	.85	--	--	--
Santa Maria	23.0	1,064	1,063	1.11	.85	21.8	2.63	A
Summerland	13.6	33	40	--	--	.0	.54	A
Santa Clara:								
Sargent	17.1	13	11	--	--	8.3	.86	A
Sonoma:								
Petaluma	19.7	1	1	--	--	2.1	.63	A
Ventura:								
Bardsdale	30.6	338	307	1.60	.93	26.8	.83	M
Conejo	14.4	2	2	--	--	.0	.52	A
Ojai	17.1	68	62	.85	.85	13.0	1.63	A
Piru	23.4	173	139	1.11	.85	--	--	--
Rincon	30.0	--	9	--	--	--	--	--
Santa Paula	24.0	20	23	1.18	.85	--	--	--
Sespe	26.7	47	66	1.32	.87	--	--	--
Simi	32.3	51	47	1.73	.97	32.9	.68	M
South Mountain	28.2	1,423	1,476	1.46	.89	25.5	1.73	M
Ventura Avenue	30.2	14,872	17,865	1.60	.93	26.6	1.17	M
State	24.1	224,673	231,196	2/1.54	2/1.13			

1/Including Kings County.

2/Average value per barrel for year.

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State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base) of crude
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927	1928			
COLORADO:										
Boulder:	45.0	0.802	(1/)	(1/)	--	--	--	--	--	--
Fremont:										
Canon City	32.0	.865	--	291	\$1.60	\$1.60	\$1.60	8.9	0.17	--
Florence	29.3	.880	148)							P
Jackson:										
Walden	51.0	.775	--	(1/)	--	2/1.38	--	--	--	--
Larimer:										
Fort Collins	37.0	.840	1,222	1,260	2/2.10	2/1.50	--	--	--	--
Moffat:										
Iles Dome	35.0	.850	24	263	2/.92	2/.50	--	--	--	--
Moffat	41.0	.820	1,199	670	2/1.70	2/1.03	--	--	--	--
Rio Blanco:										
Rangely	42.5	.813	1/ 35	1/ 69	2/1.00	2/1.00	--	--	--	--
Routt:										
Tow Creek	35.0	.850	140	278	2/1.43	2/.79	--	--	--	--
State	37.2	.839	2,768	2,831	2/1.84	2/1.20	--	--	--	--

1/ In 1926 Rangely includes Boulder; in 1927, includes Boulder and Walden.

2/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline sulphur	Per cent sulphur	Type (base of crude
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
ILLINOIS: McDonough: Plymouth Monroe: Waterloo Other: State	34.2	0.854	94	95	\$1.90	\$1.33	- -	- -	- -
	30.0	.876	19	10	1.35	1.35	- -	- -	- -
	33.0	.860	7,647	6,839	2.37	1.60	- -	- -	- -
	33.0	.860	7,760	6,994	1/2.22	1/1.67			
INDIANA: Adams, etc.: Northeastern Gibson, etc.: Southwestern (Princeton) State	35.8	.846	150	126	2.25	1.48	26.0	0.48	- -
	33.0	.860	658	726	2.37	1.60	- -	- -	- -
	33.4	.858	803	852	1/2.19	1/1.63			

1/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline sulphur	Per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927	1928			
KANSAS: 1/ Anderson:	35.0	0.850	1,161	832	\$2.21	\$1.11	\$1.25	--	--	--
Butler:										
Eldorado	36.0	.845	2,406	2,759	2.29	1.13	1.28	--	--	--
Leon-Weaver	34.0	.855	506	1,070	2.13	1.09	1.22	--	--	--
Other	34.0	.855	7,465	6,689	2.13	1.09	1.22	--	--	--
Cowley:										
Rainbow Bend	39.0	.830	1,405	803	2.53	1.19	1.37	--	--	--
Winfield	38.0	.835	815	1,207	2.45	1.17	1.34	--	--	--
Other	39.0	.830	1,723	1,294	2.53	1.19	1.37	--	--	--
Greenwood:										
Seely	40.0	.825	4,956	3,937	2.61	1.21	1.40	--	--	--
Teeter	36.8	.841	6,776	3,958	2.29	1.13	1.28	30.1	0.19	M
Other	40.0	.825	3,671	2,947	2.61	1.21	1.40	--	--	--
Greenwood-Woodson:										
Virgil	38.0	.835	1,672	1,821	2.45	1.17	1.34	--	--	--
Russell:	39.0	.830	1,858	1,026	2.53	1.19	1.37	--	--	--
Sumner:	38.0	.835	1,248	6,708	2.45	1.17	1.34	--	--	--
Other:	32.0	.865	5,836	6,018	1.97	1.05	1.16	--	--	--
State	36.5	.842	41,498	41,069	2/2.26	2/1.42				

1/ Production for all fields except "Other," taken from Oil & Gas Journal.

2/ Average value per barrel for the year.

State County Field	Average gravity		Production (thous- ands of barrels)		Posted price per barrel July 1		per cent gasoline	per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
KENTUCKY:									
Bath:									
Ragland	23.2	0.915	12	12	\$1.25	\$0.95	--	--	--
Ohio:	35.0	.850	363	1,326	2.20	1.33	--	--	--
Warren:	36.0	.845	409	321	2.30	1.33	--	--	--
Various	36.0	.845	5,490	5,060	<u>1/2.50</u>	<u>1/1.50</u>	--	--	--
State	35.8	.846	6,274	6,719	<u>2/2.43</u>	<u>2/1.67</u>	--	--	--

1/ Somerset grade.

2/ Average value per barrel for year.

State County Field	Average gravity Degrees A.P.I. gravity	Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline	Per cent sulphur	Type (base of crude)
		1926	1927	1926	1927			
LOUISIANA:								
Acadia:								
Jennings	24.3	342	299	\$1.35	\$1.15	0.0	0.36	A
Bossier:								
Bellevue	19.0	788	472	1.50	1.25	--	--	--
Elm Grove	29.5	222	222	2.10	1.14	13.5	.27	M
Caddo:								
Caddo - light	40.1	3,587	4,310	2.45	1.36	--	--	--
Caddo - heavy	25.5	1,162	1,479	2.10	1.10	--	--	--
Calcasieu:								
Edgerley	21.0	207	467	1.60	1.20	.0	.68	A
Lockport	24.8	1,343	2,038	--	--	--	--	--
Starks	21.0	--	262	--	1.20	--	--	--
Sulphur	20.9	--	(1/)	--	--	--	--	--
Vinton	18.6	2,215	1,786	1.60	1.20	--	--	--
Cameron:								
Hackberry	21.0	--	(1/)	--	1.15	--	--	--
Sweet Lake	29.5	1/ 16	1/ 181	--	--	--	--	--
Claiborne:								
Haynesville	35.0	3,328	2,600	2.10	1.26	--	--	--
Homer	36.2	2,033	1,785	2.20	1.28	30.2	.63	M
De Soto:								
De Soto	36.0	321	541	2.30	1.28	--	--	--
Iberia:								
Iberia	21.0	--	(1/)	--	--	--	--	--
Jefferson Davis:								
Welsh	22.0	(1/)	(1/)	--	--	--	--	--

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline sulphur	Per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
LOUISIANA (Cont'd):									
La Salle: Urania	21.0	0.928	3,669	3,321	\$1.15	\$1.00	\$0.75	--	--
Red River: Bull Bayou-Crichton	39.5	.828	1,037	1,070	2.25	1.34	1.37	--	--
St. Martin: Anse La Butte	24.0	.910	17	17	--	--	--	--	--
Webster: Cotton Valley Haynesville (See Claiborne)	29.0	.832	2,914	1,968	1.20	1.00	.75	--	--
State	29.9	.877	23,201	22,818	2/1.65	2/1.30	--	--	--

1/ In 1926 Sweet Lake includes Welsh. In 1927 Sweet Lake includes Hackberry, Iberia, Sulphur, and Welsh.
2/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline sulphur	Per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
MICHIGAN:	44.0	0.806	94	439	1/\$2.69	1/\$1.90	- -	- -	- -
MONTANA:									
Carbon:									
Elk Basin	42.0	.816	19	17	2.40	1.33	- -	- -	- -
Petroleum:									
Cat Creek	49.7	.781	1,015	2/ 779	2.40	1.33	63.2	0.36	- -
Stillwater:									
Lake Basin	44.0	.806	63	48	2.40	2.40	- -	- -	- -
Toole:									
Kevin-Sunburst	71.9	.866	6,630	4,214	1.05	1.35	- -	- -	- -
State	34.8	.851	7,727	5,058	1/1.32	1/1.40	- -	- -	- -

1/ Average value per barrel for year.
2/ Includes Bannatyne and Devils Basin.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927	1928			
NEW YORK:	43.5	0.809	1,956	2,242	\$3.65	\$2.90	\$3.05	--	--	--
NEW MEXICO:										
Eddy:										
Artesia	37.0	.840	1,016	582	1.95	1.00	1.00	--	--	--
Lea:										
Maljamar	33.0	.860	2	39	--	--	--	--	--	--
McKinley:										
Hospah	30.0	.876	--	(1/)	--	--	--	--	--	--
San Juan:										
Hogback	56.0	.755	221	223	2.45	1.38	1.33	--	--	--
Rattlesnake	65.0	.720	1/ 427	1/ 382	--	--	--	--	--	--
Table Mesa	57.0	.751	(1/)	(1/)	--	--	--	--	--	--
Other:										
	54.0	.763	(1/)	(1/)	--	--	--	--	--	--
State	48.5	.786	1,666	1,226	2/ 1.96	2/ 1.37	--	--	--	--

1/ Rattlesnake includes Bloomfield and Table Mesa in 1926; includes Bloomfield, Hospah, and Table Mesa in 1927.

2/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline	Per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
OHIO:									
Allen, etc. Northwestern (Lima)	36.6	0.842	1,880	1,709	\$2.48	\$1.71	\$1.55	--	--
Cuyahoga: Cleveland	38.2	.834	165	170	--	--	--	--	--
Washington, etc.: Corning	40.0	.825	1,500	1,500	2.55	1.45	1.70	--	--
Macksburg	42.5	.813	3,105	3,492	3.30	2.50	2.65	--	--
Wayne: Wooster	38.1	.834	622	722	2.55	1.77	1.57	--	--
State	40.2	.824	7,272	7,593	1/2.64	1/1.97	--	--	--

1/ Average value per barrel for year.

State County Field	Average gravity: Degrees Specific A.P.I. gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base of crude).
	1926	1927	1926	1927	1926	1927	1928			
OKLAHOMA: 1/ Caddo:										
Cement	34.6	0.852	624	711	\$2.13	\$1.24	\$1.22	20.2	0.19	P
Carter:										
Fox	23.6	.912	1,161	1,329	1.30	.76	.96	-	-	-
Graham	38.0	.835	2,953	1,978	2.45	1.32	1.34	-	-	-
Healdton	30.0	.876	5,501	5,448	1.81	1.16	1.06	-	-	-
Hewitt	33.5	.858	4,201	3,539	2.05	1.22	1.19	26.6	.72	M
Carter-Stephens:										
Sholem-Alchem	32.0	.865	2,011	5,256	1.97	1.20	1.16	-	-	-
Cotton:										
Walters	33.3	.859	346	338	2.05	1.22	1.19	27.7	.42	M
Creek:										
Bristow	34.0	.855	9,080	7,586	2.13	1.24	1.22	-	-	-
Cushing	39.4	.828	7,621	6,942	2.53	1.34	1.37	37.5	.28	M
Glenn	34.0	.855	3,204	2,903	2.13	1.24	1.22	-	-	-
Mounds	36.0	.845	3,788	2,996	2.29	1.28	1.28	-	-	-
Slick	33.0	.860	2,088	1,767	2.05	1.22	1.19	-	-	-
Garfield:										
Garber	45.6	.799	11,208	5,293	3.01	1.46	1.55	52.4	.14	M
Garvin:										
Robberson	25.0	.904	1,045	944	1.30	.81	.96	-	-	-
Grady:										
Knox	36.7	.841	471	2,764	2.29	1.28	1.28	-	-	-
Grant:										
Deer Creek	40.0	.825	28	310	2.61	1.36	1.40	-	-	-

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State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1.			Per cent gasoline	Per cent sulphur	Type (base of crude).
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927	1928			
OKLAHOMA (Cont'd): Hughes-Okfuskee: Papoose	38.0	0.835	3,633	2,468	\$2.45	\$1.32	\$1.34	- -	- -	- -
Kay:										
Blackwell	39.0	.830	624	486	2.53	1.34	1.37	36.3	0.24	M
Braman	41.0	.820	5,579	3,585	2.69	1.38	1.43	- -	- -	- -
Fonca	40.0	.825	295	258	2.61	1.36	1.40	- -	- -	- -
Thomas	42.0	.816	1,741	1,010	2.77	1.40	1.46	- -	- -	- -
Kay-Noble:										
Tonkawa	42.0	.816	13,867	7,747	2.77	1.40	1.46	- -	- -	- -
Lincoln:										
Davenport	43.2	.810	4,310	1,225	2.85	1.42	1.49	- -	- -	- -
Muskogee:										
Boynton	36.8	.841	1,168	1,033	2.29	1.28	1.28	24.1	.15	- -
Okfuskee:										
Deaner-Lyons	41.0	.820	1,492	1,267	2.69	1.38	1.43	- -	- -	- -
Okmulgee:										
Bald Hill	41.9	.816	1,527	1,325	2.69	1.38	1.43	37.6	.15	M
Henryetta	36.6	.842	1,489	867	2.29	1.28	1.28	25.3	.13	M
Osage:										
Osage (Outside Burbank)	36.0	.845	12,041	11,143	2.29	1.28	1.28	- -	- -	- -
Osage-Kay:										
Burbank	37.6	.837	16,353	15,266	2.37	1.30	1.31	29.7	.32	M
Pawnee:										
Cleveland	36.8	.841	1,659	1,209	2.29	1.28	1.28	30.6	.26	M

State County Field	Average gravity Degrees Specific A.P.I. gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base of crude).
	37.0	0.840	1926	1927	1926	1927	1928			
OKLAHOMA (Cont'd): Pawnee-Payne: Yale-Quay			2,903	1,922	\$2.37	\$1.30	\$1.31	- -	- -	- -
Pontotoc: Allen	29.7	.878	174	903	1.73	1.14	1.01	22.7	0.62	M
Pottawatomie: Pearson	38.0	.835	- -	813	2.45	1.32	1.34	- -	- -	- -
Rogers: Claremore	34.0	.855	568	643	2.13	1.24	1.22	23.8	.14	M
Seminole: Bowlegs	39.5	.828	- -	36,650	2.53	1.34	1.37	- -	- -	- -
Cronwell	38.0	.835	6,193	4,521	2.45	1.32	1.34	- -	- -	- -
Earlsboro	40.0	.825	388	36,885	2.61	1.36	1.40	- -	- -	- -
Little River	38.0	.835	- -	5,144	2.45	1.32	1.34	- -	- -	- -
Searight	38.2	.834	- -	10,233	2.45	1.32	1.34	36.0	.24	M
Seminole City	39.0	.830	10,839	47,040	2.53	1.34	1.37	- -	- -	- -
Wewoka	38.5	.832	9,574	5,900	2.45	1.32	1.34	- -	- -	- -
Stephens: Comanche	33.7	.857	314	295	2.05	1.22	1.19	26.3	.41	M
Duncan	35.4	.848	2,175	2,002	2.21	1.26	1.25	31.4	.40	M
Tulsa: Bixby	37.0	.840	959	857	2.37	1.30	1.31	- -	- -	- -
Broken Arrow	34.4	.853	443	412	2.13	1.24	1.22	26.2	.19	M
Other:	38.2	.834	23,557	24,562	2.45	1.32	1.34	- -	- -	- -
State	38.2	.834	179,195	277,775	2/2.31	2/1.43				

1/ Production for all fields except "Other" taken from Oil & Gas Journal.

2/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline sulphur	Per cent sulphur	Type (base of crude).
	A.P.F.	Specific gravity	1926	1927	1926	1927	1928			
PENNSYLVANIA: Venango: Bradford Franklin Pennsylvania grade	43.5	0.809	4,450	5,500	\$3.65	\$2.90	\$3.05	- -	- -	- -
	29.5	.879	35	34	- -	- -	- -	- -	- -	- -
	40.0	.825	4,476	3,992	3.55	2.80	2.90	- -	- -	- -
	42.0	.816	8,961	9,526	1/3.56	1/3.06	- -	- -	- -	- -
State										
TENNESSEE:										
	41.0	.820	43	60	1/2.33	1/1.50	- -	- -	- -	- -

1/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base of crude).
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927	1928			
TEXAS:										
North & Central 1/										
Breckenridge	36.2	0.844	2,058	(2/)	\$2.29	\$1.28	\$1.28	30.0	0.28	M
Brown County	35.0	.850	3,596	7,520	2.21	1.26	1.25	24.5	.17	M
Burk Burnett	37.4	.838	4,330	4,592	2.37	1.30	1.31	36.3	.38	M
Caddo	37.2	.839	1,241	(2/)	2.37	1.30	1.31	30.5	.20	M
Desdemona	37.2	.839	646	(2/)	2.37	1.30	1.31	-	-	-
Electra	40.2	.824	6,127	5,100	2.61	1.36	1.40	29.4	.14	M
Holliday	37.2	.839	(2/)	(2/)	2.37	1.30	1.31	40.8	.25	M
Jones County	40.5	.823	51	627	2.61	1.36	1.40	38.2	.41	M
Montague County	22.0	.922	1,960	4,241	1.17	1.12	.76	-	-	-
Moran	39.0	.830	(2/)	(2/)	2.53	1.34	1.37	34.4	.16	M
Petrolia (Clay County)	36.8	.841	205	241	2.29	1.28	1.28	34.0	.38	M
Ranger-Eastland	37.0	.840	1,834	2,771	2.37	1.30	1.31	30.2	.17	M
Santa Ana	39.4	.828	(2/)	(2/)	2.53	1.34	1.37	15.3	.16	M
Strawn	35.6	.847	(2/)	(2/)	2.21	1.26	1.25	24.4	.13	M
Other	37.3	.838	27,884	29,714	2.37	1.30	1.31	-	-	-
	36.1	.844	49,932	54,806	2.29	1.28	1.28	-	-	-
East & South-Central:										
Atascosa-Bexar:										
Somerset	34.0	.855	791	767	2.13	1.09	1.09	31.0	1.40	M
Caldwell:										
Lytton Springs	38.0	.835	1,783	784	2.45	1.32	1.34	-	-	-
Caldwell-Guadalupe:										
Luling	26.8	.894	7,699	6,169	1.30	1.00	1.00	-	-	-
Freestone-Limestone-										
Navarro:										
Corsicana	34.0	.855			(2.13	1.24	1.22	19.7	.24	-
Currie	42.0	.816			(2.77	1.40	1.46	-	-	-
Mexia	35.6	.847			(2.21	1.26	1.25	17.3	.19	-
Nigger Creek	38.5	.832	20,494	12,417	(2.45	1.32	1.34	-	-	-
Powell	37.5	.837			(2.37	1.30	1.31	-	-	-
Wortham	38.5	.832			(2.45	1.32	1.34	-	-	-
Other	40.0	.825			(2.61	1.36	1.40	-	-	-

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline sulphur	Per cent sulphur	Type (base of crude).
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
TEXAS (Cont'd):									
East & South-Central									
(Cont'd.):									
McKullen:	18.0	0.947	52	29	--	--	--	--	--
Calliham									
Milam:									
Minerva	38.5	.832			(\$1.25	\$1.27	--	--	--
Williamson:	37.6	.837	535	508	(	1.30	2.64	0.15	P
Thrall	21.8	.923	36	43	--	--	--	--	--
Other	34.0	.855	31,390	20,717	2.13	1.24	--	--	--
Panhandle:									
Carson-Hutchinson)									
Gray	35.8	.846	25,551	40,253	1.70	.95	3/22.3	3/.62	3/ P
Wheeler						.94	--	--	--
						.94	--	--	--
West Texas: 4/									
Crane-Upton:									
Church-Fields	31.1	.870			(	.82	26.8	2.69	M
McCaney	28.0	.837	2,204	30,607	(	.76	--	--	--
McElroy	32.8	.861			(	.84	26.6	2.40	M
Crockett:									
World	29.7	.878	237	516	1.40	.78	18.8	.59	M
Howard-Glasscock:									
Chalk-Roberts	31.3	.869	--	1,072	--	.82	23.7	.91	M
Mitchell:									
Westbrook	25.0	.904	1,372	1,365	1.40	1.05	--	--	--
Pecos-Crockett:									
Yates	30.0	.876	(2/)	5,329	--	.80	22.2	1.61	--
Reagan:									
Big Lake	38.2	.834	10,937	8,986	--	--	32.8	.36	M
Winkler:									
Hendricks	30.0	.876	--	3,641	--	.80	22.7	1.53	--
Other	30.0	.876	8	22	--	.80	--	--	--
	32.5	.863	14,758	51,538	1.55	.84	--	--	--

State		County	Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base of crude).
Degrees	Specific			1926	1927	1926	1927	1928					
A.P.I.	gravity												
TEXAS (Cont'd):													
Southwest:													
				22.0	0.922	4,150	3,056	\$1.25	\$1.00	\$1.00	--	--	--

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1/ Production by districts, except for "Other," from Oil & Gas Journal. Includes Archer, Baylor, Brown, Callahan, Clay, Coleman, Comanche, Cooke, Eastland, Erath, Jack, Jones, Montague, Palo Pinto, Runnels, Shackelford, Stephens, Throckmorton, Wichita, Wilbarger, and Young Counties.

2/ Included in "Other."

3/ Hutchinson County.

4/ Prices for 1926 are for August 1, the date of the first posting.

5/ Posted prices are for Grade A.

6/ Barbers Hill included in Goose Creek.

7/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline sulphur	Per cent sulphur	Type (base of crude)
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927	1928			
WEST VIRGINIA: Kanawha: Cabin Creek Kellys Creek	47.0	0.793	840	793	-	-	-	-	-	-
	45.6	.799	35	33	-	-	-	39.6	0.11	P
Various: Pennsylvania grade	42.7	.812	5,071	5,197	\$3.50	\$2.75	\$2.85	29.5	.20	P
State	43.3	.810	5,946	6,023	1/ 3.46	1/ 2.89	-	-	-	-

1/ Average value per barrel for year.

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1			Per cent gasoline	Per cent sulphur	Type (base of crude).
	Degrees	Specific	1926	1927	1926	1927	1928			
	A.P.I.	gravity								
WYOMING:										
Albany: Rex Lake	32.3	0.864	53	44	\$1.45	\$1.10	\$1.10	--	--	--
Big Horn: Greybull	44.7	.803	(1/)	28	2.40	1.33	1.33	38.6	0.08	P
Carbon: Rock Creek	36.4	.843	1,029	982	2.25	1.25	1.25	31.4	.27	M
Converse: Big Muddy	32.4	.863	1,215	1,072	2.25	1.25	1.25	22.2	.17	M
Fremont: Lander Pilot Butte	23.4 35.4	.914 .848	2/ 165 20	2/ 246 17	.85 1.75	.80 1.75	.80 1.75	11.0 24.0	2.62 .22	M
Hot Springs: Grass Creek Hamilton Dome	44.0 25.2	.806 .903	1,025 319	974 313	2.40 1.35	1.33 .85	1.33 .85	-- 17.6	-- 2.09	-- M
Lincoln-Sublette: La Barge	30.0	.876	70	341	--	--	--	--	--	--
Natrona: Notches Dome Poison Spider Salt Creek Teapot	22.0 15.0 36.8 36.4	.922 .966 .841 .843	34 3/ 376 18,010 426	24 3/ 247 14,399 314	.65 1.00 2.29 2.29	.65 1.00 1.28 1.28	.65 1.00 1.28 1.28	-- -- 29.3 --	-- -- .18 --	-- -- M --
Niobrara: Lance Creek Mule Creek	40.4 31.7	.823 .867	540 --	269 188	2.40 1.75	1.33 1.10	1.33 1.10	33.5 11.7	.18 .14	M M

State County Field	Average gravity		Production (thou- sands of barrels)		Posted price per barrel July 1		Per cent gasoline	Per cent sulphur	Type (base of crude).
	Degrees A.P.I.	Specific gravity	1926	1927	1926	1927			
WYOMING (Cont'd):									
Park:									
Elk Basin	42.0	0.816	273	337	\$2.40	\$1.33	- -	- -	- -
Sweetwater:									
Lost Soldier	30.2	.875	4/2,059	4/1,341	1.60	.95	16.7	0.11	M
Weston:									
Osage	37.6	.837	113	107	2.40	1.33	34.8	.29	M
Other:	30.0	.876	49	64	- -	- -	- -	- -	- -
State	35.8	.846	25,776	21,307	5/1.98	5/1.40			
1/ Greybull included in "Other" in 1926. 2/ Includes Dallas and Derby Domes. 3/ Includes Iron Creek, Simpson Ridge, and South Casper. 4/ Includes Ferris. 5/ Average value per barrel for year.									
United States	32.2	.864	770,874	901,129	1/1.38	1/1.30	- -	- -	- -

1/ Average value per barrel for year.